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Art Unit: 1711

03165-UPS

REMARKS

In the Office Action, claims 1-12 are rejected under 35 U.S.C. §102(b) as being

anticipated by Goldberg et al., and claims 1-2, 4-6 and 9-17 are rejected under 35 U.S.C.

§102(b) as being anticipated by Vogl et al.

The instant invention discloses a process of preparing crosslinkable UV absorbing

agent. A mixture of reactants comprising a UV absorbing compound with multiple

pendant hydroxyl groups and an unsaturated monoglycidyl compound with both reactive

glycidyl and vinyl groups is first prepared. The mixture of reactants is mixed with a base

catalyst. A synthesis reaction of the crosslinkable UV absorbing agent is initiated under

heating and the resulting product is recovered after the synthesis reaction. In the process,

the glycidyl methacrylate or glycidyl acrylate compound used is 140 to 250 parts

based on 100 parts of benzophenone derivatives. It should be noted that an important

aspect of the instant invention is the high ratio of the glycidyl methacrylate or glycidyl

acrylate compound relative to the benzophenone derivatives so as to fully dissolve

the benzophenone derivative (paragraph [0026]).

Goldberg et al. teaches ethylenically unsaturated derivatives of 2,4-

dihydroxybenzophenone. The glycidyl acrylate or glycidyl methacrylate, in a

concentration amounting to a slight stoichiometric excess in the order of about 10 to

20% over the subsequently added 2,4-dihydroxybenzophenone intermediate (col. 3,

lines 55-60). In comparison, the instant invention has a much higher ratio in the two

compounds (40-150% weight over instead of stoichiometric 10-20% over). The maximal

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amount of glycidyl methacrylate compound used in the art of Goldbert et al. is 312 parts

compared to 246 parts of the 2,2',4,4'-tetrahydroxybenzophenone (weight ratio

<u>~128:100)</u>.

In fact, the instant invention is made to overcome the deficiency that the art of

Goldberg et al. usually results in a lens with defects as puddle and overly curved shape.

As described in the specification of the instant invention (paragraph [0026]) about the

drawback of Goldberg et al., a much less amount of the unsaturated monoglycidyl

acrylate was used in the synthesis and was not able to form a homogeneous liquid

solution before or after the reaction. An abundant residual monomer content could also

be found in these defected lenses because such a low amount of glycidyl methacrylate

used can not fully dissolve the benzophenone derivatives and, henceforth, can not

produce a homogeneous clear reactive UV product to manufacture a clear and defect-free

contact lens.

Vogl et al. teach ethylenically unsaturated derivatives of 2-(2-hydroxyphenyl)-2H-

dihydroxybenzophenone. The benzotriazole and glycidyl acrylate compounds are

dissolved in a solvent (benzenetoluene or benzene) first before reaction (col. 3, lines 19-

21; cols 5-6, Examples 1&2; ccol. 7, Example 9; col. 8, Example 11). The benzotriazole

and glycidyl acrylate compounds are reacted at equimolar ratio. Vogl et al. also

suggest that "although excess epoxy monomer or excess benzotriazole compound can

be used, there is no real advantage in varying from equimolar ratios" (col. 3, lines

25-29). The actual weight percentage of glycidyl acrylate used is lower than that of

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the benzotriazole compound (col. 3, lines 19-21; col. 5-6, Examples 1&2; col. 7,

Example 9; col. 8, Example 11). It is clear that Vogl et al. have indeed taught away

from and not anticipated the instant invention in which a great excessive glycidyl

acrylate and the non-solvent system are used to prepare the UV reactive compound.

In response to the office action, claim 1 has been amended to specifically point

out the unique subject matter of the instant invention, i.e., "wherein the compound (B)

is at least 140 parts based on 100 parts of said compound (A)", so as to distinguish

with the cited prior arts. From the above discussion, both Goldberg et al. and Vogl et al.

fail to anticipate the importance of using excess glycidyl acrylate or glycidyl

methacrylate to completely dissolve the benzophenone derivative. The amended claim

1 should have overcome the rejections under 35 U.S.C. §102(b) and be allowable. Claim

2 is also amended accordingly. By virtue of dependency, claims 2-17 should also be

allowable.

With regard to the US Pat. No. 4585693 which discloses a benzophenone type UV

stabilizer being used to produce UV blocking enamel paints, the glycidyl methacrylate is

copolymerized with other acrylic monomers first to prepare a copolymer with molecular

weight preferably 2000~10000 first (col. 8, lines 48-54; cols. 9-10, Example 1-3B; col.

11, Example 7) and then the benzophenone type UV stabilizer is added to react with this

copolymer in a temperature range of 100~175° with the presence of the organic solvent

(cols. 9-10, Example 1-3B; column 11, Example 8). In the instant invention, however,

the benzophenone type UV stabilizer is reacted directly with the glycidyl

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methacrylate in a lower temperature non-solvent environment. US Pat. No. 4585693

fails to anticipate the instant invention in which a great excess of glycidyl acrylate

and the non-solvent system are used to prepare the UV reactive compound.

In US Pat. No. 3429852, the amount of glycidyl methacrylate used to react with

the benzophenone type UV stabilizer is basically in an equimolar concentration or slightly

stoichiometric excess about 10-20% over the benzophenone stabilizer (column 4, lines

15-21). The actual weight of glycidyl methacrylate used is much less than that of the

benzophenone type UV stabilizer (columns 7 & 8, Examples 1-5). As described

previously, this small amount of glycidyl methacrylate could not fully dissolve the

benzophenone type UV stabilizer and, therefore, results in an inhomogeneous liquid

product that can not be used to prepare a clear contact lens. US Pat. No. 3429852 does

not disclose using excess glycidyl acrylate or glycidyl methacrylate to completely

dissolve the benzophenone derivative.

In US Pat. No. 4395463, an equimolar of glycidyl methacrylate is used to react

with the benzophenone type UV stabilizer which is then dissolved by a large amount of

acrylate monomer to prepare the high molecular weight polymer coatings (col. 7, lines

53-66). As shown but not fully disclosed in the patent, the inhomogeneous reacted

glycidyl methacrylate/benzophenone stabilizer mixture is also required to be dissolved

first before conducting the polymerization. US Pat. No. 4395463 does not teach using

excess glycidyl acrylate or glycidyl methacrylate to completely dissolve the

benzophenone derivative.

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From the foregoing discussion, it is clear that the instant invention differs from the cited prior arts. None of the cited prior arts has anticipated the limitation recited in the amended claim 1. The physical difference results in different effects and is not obvious. The amended claims 1-17 are in full condition for allowance. The specification has been amended to correct a few editorial and grammatical errors. Prompt and favorable reconsideration of the application is respectfully solicited.

Respectfully submitted,

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Agent for Applicant

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